REMARKS

The Office Action dated May 12, 2003 has been carefully considered. Claims 1, 9-13 and 50 have been amended. Claims 1-51 are in this application.

Claims 9-15 and 36 were objected to as being based on a rejected base claim, but would be allowable if rewritten in independent form. Claims 9-13 and 36 have been rewritten in independent form. Claims 14 and 15 depend from claim 13. Accordingly, claims 9-15 and 36 are allowable.

Original claims 1, 2, 5, 7, 23-25, 27-30, 33, 35, 41-45 and 50 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 5,429,140 to Burdea et al.

Burdea et al. disclose a rehabilitation system for rehabilitating a human appendage. The human appendage interacts with diagnostic hardware to measure the position of the human appendage or force exerted by the human appendage against an object. Instruction means receive the measurement of the position and force exerted by the human appendage for providing rehabilitation control signals. A force feedback rehabilitation means connected to the instruction means manipulates the appendage in response to the rehabilitation control signals.

In contrast to the invention defined by the present claims, Burdea et al. do not teach or suggest measuring position of a tip of each of one or more digits in relation to a palm of the hand to provide second sensor data. Rather, Burdea et al. measures the general position of the appendage, but not the position of the tip of each of the digits. Applicants note that the measurement of the position of the tip provides additional data which can be used for exercises concentrating on particular parameters of hand movement, as described on page 7, lines 1-20 of the present application. In addition, Burdea et al. do not teach or suggest determining performance of the user for data sensed by sensing position of one or more digits of the hand and the sensor data of the position of the tip of each of the digits. Further, Burdea et al. do not teach or suggest that in response to the determined performance, a virtual image and the force feedback means are updated, as described on page 2, line 31 - page 3, line 11 of the present application. The present invention provides a performance-based interaction with the user in order to increase motivation while exercising. The virtual images are updated based on the user's performance.

Accordingly, Burdea et al. do not teach or suggest each of the claimed features of the

present invention, and claims 1, 2, 5, 7, 23-25, 27-30, 33, 35, 41-45 and 50 are not anticipated by Burdea et al.

Claims 3, 4, 6, 8, 31, 32, 34 and 46-49 were rejected under 35 U.S.C. § 103 as obvious in view of Burdea et al. in combination with U.S. Patent No. 6,413,229 to Kramer et al.

Kramer et al. disclose a robotic force-feedback system. The device includes a sensing body link connected to a non-sensing body link. A force is generated at the sensing body link and a movement at the sensing body joint. The generated force is applied to the sensing body link and the non-sensing body part.

In contrast to the invention defined by the present claims, Kramer et al. do not teach or suggest a system for rehabilitation of neurometer disorders including measuring portion of a tip of each of one or more digits in relation to a palm of the hand to provide second sensor data. Further, Kramer et al. do not teach or suggest updating a virtual image in response to user performance during an exercise. Instead, Kramer et al. is directed to a robotic interface which measures angles of relevant body parts but does not provide measurement of the tip of each of the digits for providing additional data useful for exercising hand movement. There is no teaching or suggestion in Kramer et al. that in response to performance during an exercise a virtual image is updated. Rather, Kramer et al. is directed to robotic manipulation which teaches away from updating a virtual image based on performance. In addition, with regard to claims 46-48, neither Burdea et al. nor Kramer et al. teach a method for rehabilitation of a stroke patient including updating virtual images in response to performance of a patient during exercise.

Accordingly, Kramer et al. do not cure the deficiencies of Burdea et al. noted above, and the present invention is not obvious in view of Burdea et al. or Kramer et al. alone or in combination since neither reference teaches a system or method for rehabilitation of a neurometer disorder or rehabilitation of a stroke patient in which first and second sensor data is used to determine performance of the user and a virtual image is updated based on the user's performance during an exercise such that the force feedback means move one or more digits to a position represented by the virtual image or applies a force to the one or more digits.

Claims 16-19, 26 and 37-39 were rejected under 35 U.S.C. § 103 as obvious in view of Burdea et al. in combination with Kramer et al. and further in view of U.S. Patent No. 6,425,764

to Lamson.

Lamson teaches a method of treating a psychological, psychiatric or medical condition in which a psychological strategy is chosen for treating a psychological, psychiatric or medical condition. A virtual reality environment is provided for receiving responses from the patient and instructing the patient how and when to use the virtual reality environment.

In contrast to the invention defined by the present claims, Lamson does not teach or suggest a system or method for rehabilitation of a neurometer disorder or rehabilitation of a stroke patient in which first and second sensor data is used to determine performance of the user and a virtual image is updated based on the user's performance during an exercise such that the force feedback means move one or more objects to a position represented by the virtual image or applied a force to the one or more digits. Further, Lamson does not teach or suggest the specific exercises defined in claims 16 and 18 of a window wiper exerciser or catching a butterfly. The specific virtual exercises represent rehabilitation of range and speed of finger motion. Neither of the exercises of the present invention provides simulations in which the objects are squeezed or dropped. Accordingly, the invention defined by the present claims is not obvious in view of Burdea et al. in combination with Kramer et al. and Lamson.

Claims 20-22 and 40 were rejected under 35 U.S.C. § 103 as obvious in view of Burdea et al. in combination with Kramer et al. and further in combination with U.S. Patent No. 5,720,619 to Fisslinger.

Fisslinger is directed to an interactive computer assisted multi-media biofeedback system which displays physiological data as a colored aura during a computer video game. The system includes: (1) a personal computer processing unit with a color video monitor, (2) a software program, installed in the personal computer able to digitally generate a color aura portrait of a user which changes in real-time in response to the changes of measured physiological variables, such as electric potentials and body temperature, (3) a game joystick which acts as a biofeedback sensor (Biostick) for measuring the physiological variables for input into the video game so as to create the aura portrait, (4) audio components which allow auditory feedback to guide the user through the video exercises or game, and (5) remote communications devices, by which remote signals can be sent, received and inputted into a computer game or other program and may

correspond to television signals broadcast for viewing on a television set. Viewing the changes of the aura allows a user to practice control of the subconscious energies and alter both the computer and television output.

In contrast to the present invention, Fisslinger does not teach or suggest a system or method for rehabilitation of a neurometer disorder or rehabilitation of a stroke patient in which first and second sensor data is used to determine performance of the user and a virtual image is updated based on the user's performance during an exercise such that the force feedback means move one or more objects to a position represented by the virtual image or applied a force to the one or more digits. Rather, Fisslinger is directed to color change based on biofeedback. There is no teaching or suggestion in Fisslinger that the system is extendable to individual finger performance for use in a system for rehabilitation of neurometer disorders of a user. Accordingly, Fisslinger does not cure the deficiencies of Burdea et al. or Kramer et al. noted above.

In view of the foregoing, Applicants submit that all pending claims are in condition for allowance and request that all claims be allowed. The Examiner is invited to contact the undersigned should he believe that this would expedite prosecution of this

application. It is believed that no fee is required. The Commissioner is authorized to charge any deficiency or credit any overpayment to Deposit Account No. 13-2165.

Respectfully submitted,

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